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**Five hundred and eighteenth Meeting.**

February 10, 1863. — MONTHLY MEETING.

The PRESIDENT in the chair.

Mr. Ritchie exhibited and explained his newly-invented compass, designed to obviate the effect of local attraction.

Professor Hitchcock read the following postscript to his paper communicated at a former meeting.

Since I presented my paper on Footmarks, in December, I have continued my researches with a large addition of new specimens, and I feel a strong confidence that the following positions may be relied upon.

1. The protuberances on the under side of the feet of living animals do not, as a general fact, correspond either to the number of phalanges or of articulations.

2. In some species, however, there is such a correspondence, sometimes showing the number of articulations, and sometimes that of the phalanges.

3. The hindmost impression in the outer toe of the thick-toed biped animals, described in my Ichnology as birds, was made, not by a phalanx or a joint, but by a heel-bone or a process on the tarso-metatarsal bone.

4. Besides this hindmost impression, however, a more careful examination of specimens has satisfied me that the outer toe had four phalanges besides the ungual, the middle toe three, and the inner one two, corresponding to the number in tridactyle living birds.

5. Still more certain is it that the quadruped *Anomæpus*, described in the Ichnology, had the same number.

6. The same is true, without much doubt, in the remarkable feathered animal, the *Archæopteryx*, lately discovered at Solenhofen.

7. Hence we cannot distinguish in fossils, as has always been supposed, between birds and quadrupeds, by the number of phalanges in their feet.

8. Hence there is as much reason to suppose that some of the fossil footmarks were made by birds, as there is for putting *Archæopteryx* into that class, as has been done by eminent zoölogists. These old animals, both the fossil and the *Lithichnozoa*, must have differed a good deal in their anatomical structure from birds, lizards, and marsupials ;

and they seem to have been so nearly intermediate between the different classes that it may be impossible to fix their place with certainty, either from tracks or skeletons. It is interesting to find that these two sources of evidence illustrate and corroborate each other.

9. The question whether the hindmost impression on the outer toe in the fossil footmarks was made by a tarsal bone, or some process on the tarso-metatarsal, has only just engaged my attention. It may have a most important bearing on the whole subject. But I am not yet prepared to present any conclusions.

Dr. B. A. Gould made a communication on the diurnal change in the position of the azimuthal arms of the transit-instrument along the Atlantic coast of the United States.

Professor Hitchcock, in this connection, recounted several observations showing a singular pressure on the earth's surface from the east, as exhibited in the pushing up of the strata in a quarry at Portland, Connecticut, and at Rutland, Vermont. And he suggested that this might account for certain peculiar rumbling sounds in the earth heard at times in Connecticut.

Professor Parsons discoursed upon the resemblances between the German and English Jury and the analogous institutions of Greece and Rome.

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**Five hundred and nineteenth Meeting.**

March 10, 1863. — MONTHLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read a letter from General A. A. Humphreys, dated Camp near Falmouth, Virginia, in acknowledgment of the announcement of his election as an Associate Fellow.

Also, from Captain Henry L. Abbot, U. S. Engineers, in acknowledgment of his election as a Fellow of the Academy.

Dr. Charles Pickering propounded the inquiry whether the irregularity in the eclipses of Jupiter's satellites may not be due to the difference between real and apparent time. To which Professor Peirce returned a negative response.